SEPTEMBER 1944 50 CENTS PER COPY

# The Oldest American Aeronautical Magazine

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"GRASSHOPPERS" AT WAR ers fought to get their croft recognized; this dramatic story

shows how right they were.

DESIGNING FOR SONIC SPEEDS - Initial revelation of Kallsman instrument for measuring Mach

INSTALLING AIRCRAFT TUBING Here's how to do the job to insure moximum efficiency and long life.

WHIPPING OLD MAN WINTER — Alosko Stor Airlines flies some of world's toughest

BRING BUSINESS TO THE AIRPORT — by moking flight facilities

on the 13-29 sential part of community life.

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craft-even these that errors at no more There's meet for both production and manuference men in S. A. Livingston's

Winter's not far away, which means that cold-weather management problems

The British-designed 10 hr 15 pleased on page 257 of our July issue severage that of microst among flying social. So, on

Down the Years in AVIATION'S Lea Law Callege offers six law course, and

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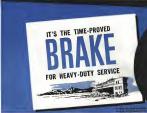


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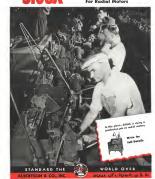
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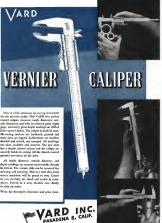
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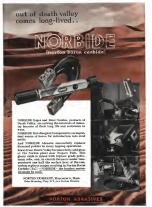
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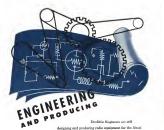
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AVIATION, Sestember, 1964



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ATIATION, September 1966

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ATLATION, Surpanher, 1944



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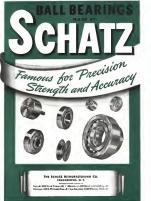
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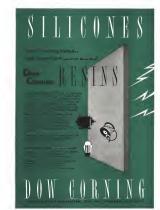
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It takes skill and nerve to title an enemy vessel, But it also takes a good electrical relay—with the best contacts if in possible in make, Without such a relay, recurred with such contacts, doubly torredon

Counter these specifications, recogily extrarted to Mallory engi-

The design prevented houting the counter into the assembly. To avoid this factor, Mallery engineers developed a new powdered mend. That mend, Mallory D 52, not the electrical regurements and was refficiently ductife to be made as solid rivets that could

Multary salved this problem as at his many others, and the knowledge than raised a still mather addition of experience that's read-





ELECTRICAL CONTACTS AND CONTACT ASSEMBLIES NON FERROUS ALLOYS, POWDERED METAL PARTS

AVIATION, Seconder, 1944

## Meed more ? How to find it in your own plant

TODAY, oblough it is obnost impossible more output by aelecting machines better creased production by adoption consecuof larger, more expensive units. Study the and consider the possibility of speeding up

Plainfield, N. J.

WALKER-TURNER COMPANY, INC. Berekmen Stroot

# V TEMPEDATIO

... and how their embrittling effect on metal parts can be avoided

must be considered ...

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Migh Properties

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Non-Mounetic Properties

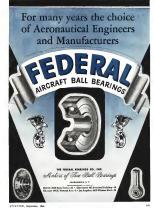
Three of the high sidged allows see page magnetic at sub-seco temperatures. Consideration of non-magnetic cher-

or "R" Mosel. This alloy can be upto as low as - 156" F. Severe cold work

A typical application is in the Sparry strength, ductility, corruption resistance and non-singuster properties of "K"

For further information reporting the Allers, write for a copy of the bookset Two Nickel Alboys for the Assorab

AVEATION, Seconder, 1944



## Wartime Experience for Finer Peacetime Flying



COMPRESSED CONTROL From Salay's incom Bestrok has organized lighter weight, all-Ar Bestreich zus engunered zgeles weight, ell-tade strang briestophers, ampraved allestophers ... and you complainty ou country water will tree yathers procure operating seath, make and port more conflictable, takes and conflict



These are but a few examples of how AiRasearch's

specialized experience will benefit pescetime flying. Perhans you can profit by this warborn experience.

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faces on America's nevest super-bombers are protected with Berryleid Incquers and examels. In war and in peace . . . wherever men fly ... wor'll find Reproduid Finishes performed.

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the frotest and highest climbing fighter in existence for this recellent common The Strambers Injection Carbureter automotivable and instantly compensates for changes in altitude. position, temperature and speed. The gas mixture is always right for all fixing conditions. And keeping our vilots on ton is only one of its adventages. It has notable incorred flight rouse so well. This ability to get more miles from a given field load will naturally make these Bendin-hailt and desterned carburctors rastly important to the cargo planes of the future. FOR TOP-FLIGHT DEDECTORMANCE

Bendix PRODUCTS DIVISION Tendix Asiation Corperation, South Bend 20, Indiana

### The Stake of the United States in Expanding World Trade

With the war in Europe racing to a ellinest, and What is this country's foreign trade progress to be our allow us to mortices operaterize the invite respects Actually, a whole new set of conditions was rejected created the need for more dollar exchange on the part Our four-induted industrial especity cannot be al-And herwise so much of the world is greened to the

If we are going to peopers ourselves restligerally to

Warld trade caprot be rebuilt simply by attempting expects of affer the Brytish well need new markets to replace the income which they farmerly derived from from more possile at home or abroad, so that they will And we probably cannot create successing buying

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2. Most war-straken popitries, for a year or two, will need 5. Longs, brawever, one only a step-grap, though often a

6. Feedly, the world needs a reversal of the trend towerd

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A # A
What role sheaff the United States when an encoun-

structure the world's international economic squise? There were those who rargent that the Uschaff distance to a many sel see permanent items (Irons They behree their in comme of adoptate sould be financies why be "latter"—lesses that would eventually sum that pitt, after the contract of the second process of the second process of the second contract in adhaptator. The permane who assess that full employment can be provided only by an occurs of expents are in effect is support that our excess of the second contract are in effect in superior that our excess of the second contract are in effects only only that our excess of the second contract the contract of the second contract of

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contrivy to do that, partly because of our resources. As seasible seeder, and pertly bosomes do mast of the lost trough-due years that consists they have been able to actiother countries move good that they have been able to sail to us. One of the greatest commissions which to that the total consequence could make be a secular and approximation of the countries of the countries of the countries of the second promises of the countries of the countries of the second promises of the countries of the countries of second or promises of the countries of the second promises of the countries of the second promises of the countries of the second promises of the countries of the countries of the countries of the countries of the second promises of the countries the countries of the countries of the countries the coun berross from bot may no mil in. (The United Englands should implement this polary (1) by constraining the should implement this polary (1) by constraining the negotation of recuprosal reductions on data, and (2) by everying enthalizing rates which sales former neutronsian shouper on dolliers than they were in 130% for great with the three which need for goods that we can be auso their any deliter cockange soursel by sales in as with the constraint sales Assertance-made ground and will find in

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Shus H.W. haw. fr.

#### Aircraft Distribution Enters a NEW Era

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With the advect of the light skyline came a new posterion of familiarous who knew senething of the hade principles of memberdung. The most prognesive membersores learned when they never allow for sufficient

y discounts in their price adodules to attract responsible distribution and dealers. A bealthy rise in personal elevative values was interrupted

Now we not entring mother new period in arcould discribetion. For metry mosals Axiacrase, has been presenting control designed to help ensudanceurs in their pottent planning. In this must (syape 116) we offer pictures at the first of the cray of new postwar strylant models along with one of the first distribution programs to be finensiated in the personal astront field.

The receive is based upon sound present appricate and tilliaged for the mode of our posteron radical encourse. It does not then sell nightless. Be tell, young news and returning versions the opportunity to find onphyquants in an aemorithe new bandows. Thus is contributes to the oblides of the critical popularity of the contributes of the critical or contributes to the oblides of the critical contributes to the oblides of the critical suscessing personal dying it geometres to sell for the didd's fill that one low served if we crosses

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Musatement and distributes of sirplans or engagement and those who hope to enter dis field should study the principles of this size and small them to their own beacones.

Yesli E. Zuille

#### AIRPOWER CAN MEAN NATIONAL SECURITY

A Carittee Word, Jr.

By J. CARLTON WARD, JR., Audiest, Reliable Engine & Applies Corp. Meintelaine the name requires atornel visitores, which can be had with land expanse through as advangte air force. Here is a program—which might well become noticed policy—for continuing



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#### ... And a Child Shall Fly Them

By IRVING STONE, Asiated Miles, "Ariston" The pleas isn't a contrivence which high school yeargeters look at with own. Today they are not only result to receive accompational inervision but the means shill of fight, as well. That young possile con fig. even et 14, is the proof of a solese experiment conducted by an adventional institution and a flight school appropriate -legical combineting for ground school and flight training.

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RECORD OF THE FIRST CLASS



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### MAKING THE AIRPORT A BUSINESS CENTER



By MELVIN H. HUSS, Sonsing Muncipal Aspert Constition, and Manager, For-sighted elegating and comparative between city and county make flying facilities interest with removable ladestrial life.

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#### "GRASSHOPPERS" GO TO WAR

By BLAINS STUBBLEFIELD MAKENING MAN "ACCOUNT Starries is a triple-action rale—reconsissance, audire control. and Releas - our light planes are fighting the shower last as cartainly as their bin-brother craft. What's pure, the military and the exemplecturers now mak sen-spin simpler-central "fiving inspic" resultent dealers are sure to mark the acotson chilledone market

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ATTATION, Stotember, 1944



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AVIATION, Besidentes, 1844



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#### MERCHANDISING GOES REYOND THE SALE

By ALERSO & SENNETT Director of Solos, Assessed Aircraft Corp.

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TAPERED ROLLER BEARINGS

AVIATION, September, 1844

scopuc effects. And it must carry all ...... forces. applied at long leverage, by a few puller on opposite sides of a base with only a 616" span. If you have a propeller feathering problem, we'll be

glad to help solve ir. Don't hesitate to consult us. The Timken Roller Bearing Company, Cannon 6, Ohio.

## **AVIATION**

Presents a New Regular Feature

FOR Better Design . STELL LEADERS WAS PEREN, AND STREET THIS month

coecise test and silustrations of practical ideas, methneutical industry continue to decire and build the These Better Design features will be gathered from in combat assessables, will belo service and muster sleft longer. Some will originate on account producout better planes faster. Some will spring from enginearing departments-providing the someon for other other researchers in matters of seredynamics, mahandbook winten for one parpose—to create better

#### TRANSPARENT SECTIONS SIMPLIFIED

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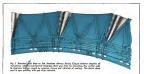


ATTATION, September, 1844

#### COWL FLAP ALTERATION

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## High Frequency A. C. "Ups" Motor Performance

PART I

By J. D. MINER, Manipleum Dictric 6 Mg. Co. Thirty horsepower for oxciliaries is a nersest bet semewhot feegh seder for the circroft electrical mendischere in fill. Here, one of these who headful it halfs how it is done.

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ATTATION, September, 15





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AVIATION, Systember, 1944

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AVEAUZON, September, 1944







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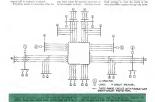
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#### MACHMETER MEASURES SAFE TOP SPEEDS

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AVIATION, Scotember, 1644

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A schematic diagram of the Machester

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2 Calculate sound speed from (3) and

#### Save Money by Spending It— On Flaps and Retractable Gear\*

N PALEN M TIP

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gery, for extension, to so extracacy few court engine such as used in models. A plot of corresponding propelle religits is above in the same figure. He

\* Torn is the Variable Streety West Tornel of the ARIA 2011 Saving with Time and good Plane, by Son H. Akken and Karry Specialists, April 20, 481, 2817

Pres Sebeses Piers With Pleas and

present in the form of a similar linear function with up to what 200 kg, the expension for the mean propeller neight becomes:

where the Fig. 3; (2)  $M_{\rm H} = 52 + 41$  kg. (2) A similar principle, hand on groun weight, it followed for the wings and for the landing pair. For equal gave, weight, the extraordic landing pair is assumed to previous housies than the fixed type, in-

when wells.

Application to a Specific Airphean
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The shows increasing lead in the full ing neights for the power plant close which are very close to the actual:

A "Professional of the Assessment State of J. St. 9, and plant
AVLATION. Sections. 1944 in the circumst affected by involving they not retractable pair may the aim raphora. In contrast, that the 20 persons of the circumstance is contrast, that the 20 persons received in other circumstance represents on the secondary parameters, but modely 12 persons reducing an interest pair a fine of circumstance is considered and parameter a circle institute of properties of circumstance and persons. The final circumstance is made the expression produced by persons. The final circumstance is made in 150, (11), orders the process place weight factor in the second cultimate.

Proceedings Residuatelya.

The element method of providing flags a convenience legis plane or no daylo es the whoreas on the should want parter to the selection on the should want parter. Even for a string of the same size, in bank to show any surmand court on it have. On the other land, any one of serial suproved, flag types would give mint stage over the same than the selection plane the smaller stage better than the smaller size.

of all power plant agention.

ion relocal digitity in space, the given a register suggistic increments the resides as a partner suggistic increments of the reliefs as it incorporates to the space of the space of 54 kp. In general state of the wellter of the space of the space of the space as estimated by the space of the space of

this perfective error, the managemen wing the classes of severa lackers is insufficient to borne completely may of the exciting factorish wheal and doe sizes. With concuration of the substrated baseline to be had from retractable gaz, it is to be looped that wheels and their makele for the purpose will soon be made available. (Then to here 54D)

# Takeoff Analysis For Flying Boats and Seaplanes

By EMEST G. STORT. See Course is slarge at hybridynamic. Surviyanus Comp Ind. Considered Falor. Mirroll Cope Concluding his two-part behaved constypis, the eather precords verted competation methods, including specific enemyles for still of read for a 15 mals. headwise.

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With Gy and Go known, hydrodynam methods confidence, G<sub>c</sub>, con be obtained. The confidence of the

B = C<sub>e</sub>u<sup>(i)</sup> (B) which is drived from equation (15), with the values entered in the colorpose and For the values of C<sub>e</sub> used, depending values of neurologous data confident C<sub>e</sub> from the values of the confident C<sub>e</sub> from the terreference classes confident.

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I Activity Factor (AP.) in a non-diminimal function of the prescript planform and sequences for expecting of the Birds elements for observing system, independent of the member of blodes. It is an artist between people be those of varying solding and is defined by the imaged

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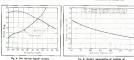


Fig. 4. Then blods people's me formance other the subjective Alexander (1972.) Forbidad Report 488, Fig. 1973.

where D is the propeller disease; R the radius of the propeller, r the radius of the propeller, r the radius of the forbidal comment. SOMON'S is an

coveries negritate. Images? if of by planing  $\binom{b}{D}\binom{c}{B}^{b}$  spains  $\binom{c}{B}$ 

Aces under this curve trans VIE or OS to VIE - 10 down the contrast is the SCHEP between the contrast is the SCHEP between the Committee of the SCHEP between the Committee of t

 $C_p = \frac{6 \times 20^6 \times EHP \times P_f}{4 \times K^2 \times D^2}$  (99) Where BHF is the bride becopourer or eaches,  $s_i$  the six density ratio  $g/g_{ij}$  (sailly in ten level), K the propolate  $EPd_i$  (sailpose  $EPd_i$   $\times$  year saille), and D the propolate discrete in h: 4 Threat Conference  $(C_p)$  is defined

 $\mathbf{C}_{0} = \frac{T}{\mu d^{2}D^{2}} \label{eq:constraints}$  where T is the three in possible  $\mu$  the consider of the ab is along per order fore (equal to a GUISTS at see Section 4 are smoother conjunions), and is the computer RTS Tryinol values for  $G_{\mu}$  are plotted in the set  $L_{0}$  of the first hinde and form

trough to doubted in the peris state specially similarly and in the propoler RTS Tryind values for C<sub>c</sub> are plotted in Fig. 8, and Fig. 7 for three halds and for likely propolers, respectively.

These tharts, when the value of C<sub>c</sub> strotted in valued 20 persons for each office and body interference, have been force and body interference, have been found to give excellent surrelemen white foll trade both with those sand four hands.

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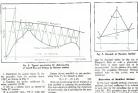
- J (20) is J (20) in J (20)

Fig. 7. Feet blods preparity perferences cheef for coloribiting threat (NACA Technical Report 840, Fig. 13).

AVEATION: Sectionber, 1844







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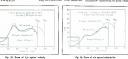
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Fig. 12, Ferbellan at this with speed anothers for review refers of

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Fig. 18. influence of a bombried as below? diagram



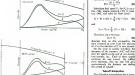


Table VI lets the characteristics used ATTATION, Espisaber, 1946

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velocity. Then, from equation 4371

a - , 85

 $a = \sqrt{\frac{2(3)}{37}} - \frac{Y_1 - Y_2}{3}$ 

Therefore, substituting in equation (46)  $S = Y_0 + \frac{1}{2}(Y_0 - Y_0) F$ 

Slace, on the syrrage, DC, will be very early erail to D.A. we may add equations 20 + 8.0 = 28° amin, sings CC, and AA, will, on the propers, differ her little from  $(Y_1 - Y_2)$ 48.0 E



Sable VI.- Chessele dalla for Europhy









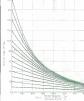
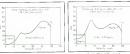


Fig. 17. Simplified separatelysis of affect of wind as folia



#### don 21 Filest of Physics Acres For 22 Effect of 15-mon Seed-







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AVIATION, September, 1944

#### Automatic Rivetina Realizes Manufacturing Economies

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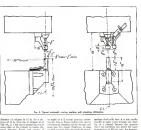
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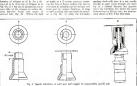
BY PAUL WISE Chail Facil & Wassinstyner Floreire Enthern Pin Glass L. Martin Compres Exceptionable and the application of a few simple rules could wallply predaction rates, reduce tebrication costs, and improve apolity of work, Here are saliest sets; so specific teeling methods.

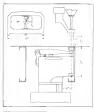
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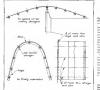


Fig. 2. Type of outcoming challer commenty used. Street.









SVEATION, September, 1966



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#### IOW TEMPERATURE WELDING EXPEDITES REPAIRS

By CLINTON L SWIFT Academ Manerer, Environment & Bernach, Extratty Weblier Affros Co.

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Fig. 1. Chance-may strengt hidden primes at least and food, Wald for over 100 886

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#### Development Of Reduced Voltage Motor Controllers

By JAMES E CARLAND interest model amount formed finder Co. and

P. B. WATSON, Curto World Core. Treesition steeps of pircreft electric motor storters from the circuit head castrol type to compact extensitic devices which relieve the eilet of much tedious detail.

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AVIATION, September, 1906

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Operation of Messel System





## Flange Rolling Improves Quality, Speeds Output

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ATTATION, September, 2944



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#### New Machine Assures Drawina Accuracy

By LYLE L. PIERCE, Water Leyest Separator, Stoony Astron's Co. Mechanically scribed and lines speed production of Fiving Fortress

and Separtertress. Grids are used for moster leyest drawings. someown from which warries air. It has much thought of employee of metal, plywood, and plantes, but also The time dewest, however, but been planes available. Among there was the and were efficient tools and represent one of which is the Borney grid markone and Douglas companies parted forces with grade. The recent layout department

Rosing to provide the greatest possible four covers border production. To set

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# **DZUS** for simplicity





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#### AVIATION, September, 1846

#### Hard Working Hydraulic Pumps Warrant Careful Service

Whee several tess total pressure are concentrated in a vital unit so larger then a men's fist, Posco's service instructions given here became of considerable importance.

It yet not though all tolds on the more promptes, very assessment in details of seconding flarges, piec connections, on. Ratasans in whose domains in premised without allowations or adjustment by the set of two reis of these wholes, which also present interfaces and premises lead to creer bushings. Though the Perror gauge is the one specifically described, the interactions for coch web.

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MAINTENANCE



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Fig. 5. Perh which require closeliny at Japantine

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> the drive shall revolved by hand. The After the above, the sump is washed

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Eq. 7. Let emission for any type of abstell hydracis; peop-blist of these fiftings are already on boad to energ langua





These are either "end" or "side" ports according to their resident. In some

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No. 2. Calmers view of Androide some with

Fig. 2 Wast and St Smits Supram, "L' Indicates Seem and "I





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Two types of fluid stal are provided for

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MAINTENANCE



Fig. 8s. Brill So and melled of equilentles. No. 4b. Sold (by he position for ma. Jby he bounded for open Sathing alleged into herge conflicted room as a relaty observable.

and generally faith to correct operation. char to prevent any chance of intercent & I.P. plage is at lowest point as a drain. installation of principle by plugging and done. anthring varmen of at least 20 in He

Though no special truth other than drift Fig shows in Fig. 6 are required posses which is sell explanatory. Test prope dury will be given have an Oak article

ve montos. Unios port adapters should be tightered

Fig. 9. Method of metaling poins of Socilings

After tightning pump mount nets, sewith hand come until all air has been se-

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folly mated in your produces and have theongh wear. E porviously need.

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Inspection and Repair gesoline or cleaning fleid. Check mear at Firm shough beshices may appear to

been removed, as there should be wo parts should be checked for wear or

Increasebly:

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Test resignant (Fig 7) should include

Test perso for freedom by turning by

19 11-12 IV and 95 rough speech are \$200 not 4000 year with a short next at 50 related aspects, check respections and

functioning is others. Infore blanking any part for sadden refund to operate. All of with view of





MAINTENANCE







#### Aircraft Tubing Requires Careful Installation

By R. A. LIVINGSTON, Ambient, Taken Seel-Gap, Ac. A relitionship relit tures out a perfect place of tables, and what happens to 177 Fleety of things. Here are a few reasons why if

Year in the banding and feebling There are four kinds of tabuer in sec-Creatic systems, etc. (\$2.50) Stateless stad tables: (\$ keef) is used cytical as to 1000 per This taking his

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\* Engiption—From for og\* n, A loss of St 52 and source from for had and of most ratio 30 percent of organic was fedicate and most stated 50 to 500 levers by a three when fugal. All type facts must be mark to ALD 19866 Anning City 12





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Fig. 2. Types of accord and assessed Ading Stability Fine with action AAF 911 or AAF-912 have Strings.

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Fig. 5. Labouries point for different types of fiftings

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WE decrees flore or threads or both if tighteness Fig. 6. Cornect method of adhesive and pointing parts of make



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AVIATION, Deptember, 1944

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examined for faulty core, cracked flare. Seel Cope and Seel-Place.





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## WINTER MAINTEN ANCE

#### :K MAINTENAN IN ALASKA

By C. O. CARY.

Suit of Operation Aloids for Anthro

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MAINTENANCE

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## PREVENTIVE MAINTENANCE KEEPS MOTORS YOUNG

By P. H. WEIGHT. Industry former delites were and

PT an other maintenance pro-

W. W. MCCULOUGH, Minimum Engine, Principles Dictor and My. Co.
Once is operation, even the best electric metar is no botter than the residence of the control decorations, and an extra control of the control decorations. Control operand methods for prolonging life of these asserties occurries without the decoration of these controls.

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efore any solving is used, he core that is good weedfaction and unknown rak. Do not let morbers' duthing one statusted with the solution steps have carbon retreatments for ITIms to have 2019.

#### Sperimber Taylor

. This compact sporkplug nester shoots 6,000 volus through over 8,000 plags or much at United Ale Lines' Chee.



Noticed Airlies Pre-Oller . Filled and presented in the bangua



#### Embry-Riddie's Biter Cleener

Field designed that Ober cleaner which from top trough fown listo tank at



disc tol runned Al Aserver



#### MAINTENANCE NOTEBOOK



## Marel Anchoropy Adjustment

Pon American Tire Daths · Wheely of transport planes counted by Pan American Assessed are up herge for applican. These are alreading bawerer, by applying this two-sleep dolly made from welded tables. The pushed to any poset in the bargar can be mised or lowered the precess



AVIATION, September, 2004.

#### Interchanceable Filet And Disk Halder

· George Street of Carting-Wright's





MAINTENANCE NOTEBOOK

#### Rudder Geerd

Proceeds Germana





Embry Elddie's Starter Stand



Lording Scripts in Counties Recific Alls . In all counts in 1942, but under twolesses decidents "Collection" CFA, adopt in mental over in force in Countie, other feed treat many "less from; fee 50,000,000 making applies prompting and the public processing of the 10,000,000 making applies are the contraction and the contraction are the contraction.

CONFUSION IN CANADA

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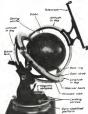
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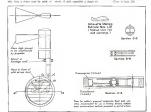
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By LEO T. PARKER, Attenuation

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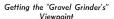
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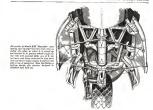
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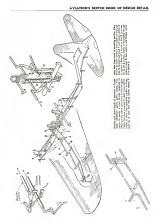
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#### ENGINEERING DATA BOOK

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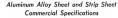


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By A. HARRY CROWELL Assessed Sales Laws

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# that of seed See the Chart. Where to save with Magnesium

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## THE SKYFREIGHTER WEIGHS IN!

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The Skyderusianes are among the twenty-five places now being returned to American Airlines by the Army and are actually the Florators Sky deepers which the Army tool, over in the spring of 1942. They have been put through a complete conversion program by American to provide facilities best adouted to carrying cripo based upon American's long especience as an air cargo-

Here a Skylreighter is officially weighed in before she starts on her masten flight. With scales under each of the lending wheels and another at the point from which the stop is suspended, the ish is done cuickly and easily. Regular weighing is important because airplanes, too, great heavier

as they grow older.

From July, 1941 to Jane, 1944 the average useful load carried by American Airlines Flan-

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#### The Return of the Gray Goose

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### Aviation Finance

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electrical equipment you may need to "keep 'emfiving, "your local Gitarrant office is ready to give SWITCHES of warehouses in more than 60 cities below you \$6. your standard evisions element congruent orders.





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The emblion of supremey in the sir signifies, too, the supremey of the mechanisti equipment that been it up. Not only in the sirensk summbilies, but in the pirms and tools that make the cipaipment, ALLEN

ALTIM here strength for soups with widding zijn, zor to be budge by shock oversor or sounized whenten. Thread solvences us hidd as a high Class 3-6, for a high diegre of frictional holding power. . . Series cold-dress and "power-ferm" of special-suspin ALTIMOV power, here overseed under scientific controls. Hazagon accent handly reached with Alfon her. Kyr in the heritest-to-greet-places. Adquadtion high-year sensoling with power driven.

Allen Hollow Server and "You-Ground" Doved Pen sup

THE ALLEN MANUFACTURING COMPANY HARTFORD, \* ALLEN \* CONNECTICUT, U.S.A.



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ATTATION Squares, 1944

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Wish Rosan Locked in Threaded Inserts you can easily and economically salvage castings which have been rejected on account of damaged threads in tap holes

Once installed, Seein Lockedon Threaded Inness become a permanent pert of the acting Valentine, forepar of foresten will acknowledge from the property of the

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AYIATION, September, 1844

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TO DEPENDABLE





No, compact power were are matted on investigate the performance record of Toward Stratus moines. The latest models are harbed by the common around is tunner-fire years of analogues production of AIR-COCCAD Geoline Engines. SHOULD STRATTON CORPORATION Missaign 1, Winness II S. A.



Foreings-leboratory controlled-strength. toughness-minimum weight that

stands up under enpredicteble loads.

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### YOUNG COOLERS KEEP PACE WITH PROGRESS

DURING the past twelve years plants have haracsocid faster - miles higher - many times further, Poolog this unprecedented path of progress were vital accessories such as the Young Alrendt Old Coolers, shown above White the 1932 could was made by the hundreds - its modern countreport is befor made by the thousands. Though alike in basic principle, the present cooler is sensity twice as large and has four times the heat transfer especity. It has rapid warm-up qualities and excellent auti-congreling characteristics. The modern Young Airsraft Cooler is the last word in efficiency . . . Is built to rigid military specifications. Let Young Heat Transfer





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-with a || GLOBE portable PLANE HOIST saves time and work ineranne efficiency in

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Save Mancy by Spending It (Centered from New 121)

Consisting Parenter





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SIMPLE BAYONET LOCK AND BACK COUNTERSINKS

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For Delivery Now



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Mich Quality Presiden Teal ERPOYS MANUFACTURING COMPANY 251 Mindry Amerya, Inglewood, California 600 Suphenon Skip, Darrow 2, Alice

the practicality of finishing the range surface of Dearborn Gares with correction resistant chromisus. After exhaustive experiments the impossible was accomplished—Chrome was actually applied to precision sare blocks and without less of accounty in anymanuer. This first major improvement in the manufacture of gage blocks brought to industry standards of measurements that would retain their true accuracies lowere than may hard steel gage made; that is why Effetromusade gage blocks will last 2 to 5 times lorner by

FACTS HARD CHROME PLATING O're of the principle advantages of chromium is However, it is sometimes true that chrome does not offer proper protection to the have metal itself due to its remaity. But wherever this inndemnate rentertion occurs, it is conscally evident that the coating is

too this or the actual plating itself has been at fault.

It is obvious therefore, that a proper plating pro-

For example, the ability of Chromium to resist corrotion certainly could not be impored as a protective enating for peopleton gage blocks . . . measuring accuracies in the millionths of an inch. But the correct nearest of ambring chemium to

cedure excuse he overcombusted.

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\* This is number 2 to a series of articles by the DEARBORN GAGE CO. MARIANE MARIANE



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### THE MERCHRY DOWN Perker Engineer about

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AVIATION, September, 1946

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Tested for Flight!







ATTATION, September, 1864



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# Solderless Terminal

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----The Sherman

# Solderless Terminal



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ATTATION, September, 1986

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SYSTEMS DIVISION

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For the piles who some a trim, high-

Automotic Rivetion (Continued from Juge 141)

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What is it worth?

Cannon Quality Control was swary so our con of manufacturing Cannon Plazs. We can't hold to such high production standards without period for it.

When a set of these instruments on dead in a severy frewhen a moster kooks out in a power disc, when a plane creates with a loss of him-ir's worth a lot to us an know that e Cannon Hen didn't caree the smable

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LIBERTY AIRCRAFT MIRROR

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### Move Over, Merlin! By EDWIN C. HILL "I will represent the Metio, of the Con- "I say handrade of observations don't

manufacturing wizardry which has been developed for the Allied Forees today . . . for you tomorrow.

AVIATION, Supposeder, 1944

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ATLATION, Supposites, 1844



Engineered and constructed to lest for beyond ordinary expectancy. Clark products . . . like the encient pyremids . . . stand up EXCEPTION-All Y and

Werese has proved to meny NEW restorers what older Clerk users have long known; that no drills prinders or senders will outlest Clerk's . . . In post-coace planning. he note to include Clark products where economy in both production and resintances is a vital factor. Full date and specifications on

drills - arinders - sanders





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Notes With Action

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29 × 20 × 1.677 = 1,000 in (70)

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... "Out"... Out" Then my 'chose opened. Thank God for a read paracless? \* \* \* "Zhank God for a reed berechster" You a parachase is a man's last change

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equation for the correction to takend do- are also placed on Plan 20 and 21 for where S., and S. are prised distance. tion (\$35) may be derived which corre-

offschol by mind. These modifications are shortward as Table X which as the same

Note that the medifications to the stand-

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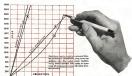
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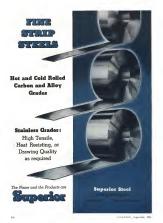




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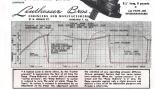
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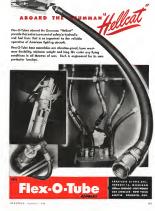
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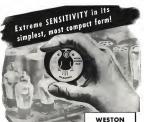








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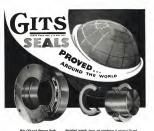
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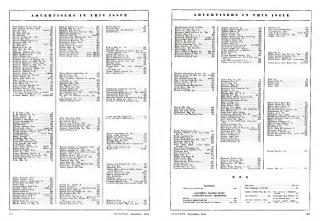
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